

What is claimed is:

1. A distribution route generation apparatus, comprising:

5 a collection device collecting information about a communications cost between a plurality of nodes of a communications network;

10 a generation device automatically generating distribution route information, which indicates a plurality of distribution routes to a plurality of clients on the communications network from a source, based on the information about the communications cost when streaming data are originated and distributed from the source to the plurality of clients; and

15 an output device outputting the distribution route information.

20 2. The distribution route generation apparatus according to claim 1, wherein said generation device generates the distribution route information by selecting a receiver node in such a way that a communications cost between the source and the receiver node is minimized.

25 3. The distribution route generation apparatus

according to claim 1, wherein said generation device generates the distribution route information by selecting a receiver node in such a way that a communications cost between each node on a distribution route being generated and the receiver node is minimized.

4. The distribution route generation apparatus according to claim 1, wherein said generation device divides the nodes into a plurality of groups, generates inter-group distribution route information using a group to which the source belongs as an origin, generates intra-group distribution route information in the group to which the source belongs using the source as an origin, and generates intra-group distribution route information in the other groups using a node that is an input branch end of an inter-group distribution route, as an origin.

5. The distribution route generation apparatus according to claim 4, wherein said generation device divides the nodes into the groups using a branch in which a communications cost between nodes is equal to or more than a threshold value, as a boundary.

6. The distribution route generation apparatus according to claim 1, further comprising

a restriction device restricting a measurement range of the communications cost.

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7. The distribution route generation apparatus according to claim 6, wherein said restriction device designates a router that is connected to a backbone of the communications network and designates at least
10 one node that is connected to the backbone via the designated router as a measurement target.

8. The distribution route generation apparatus according to claim 6, wherein said restriction device
15 detects a router located within a first restricted number of hops from a measuring node performing measurement, based on information about a route from the source to the measuring node and designates a node located within a second restricted number of hops from
20 the detected router as a measurement target.

9. The distribution route generation apparatus according to claim 1, further comprising

a detection device detecting change in a network
25 situation based on information of at least one of a

wherein said generation device switches a current distribution route to the substitute distribution route when the network situation changes.

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collecting information about a communications cost between a plurality of nodes of a communications network; and

20 14. A propagation signal propagating to a computer
a program for enabling the computer to perform a process,
said process comprising:

collecting information about a communications
cost between a plurality of nodes of a communications
25 network; and

automatically generating distribution route information, which indicates a plurality of distribution routes to a plurality of clients on the communications network from a source, based on the
5 information about the communications cost when streaming data are originated and distributed from the source to the plurality of clients.

15. A distribution route generation method,
10 comprising:

collecting information about a communications cost between a plurality of nodes of a communications network; and

automatically generating distribution route
15 information, which indicates a plurality of distribution routes to a plurality of clients on the communications network from a source, based on the information about the communications cost when streaming data are originated and distributed from the
20 source to the plurality of clients.

16. The distribution route generation method according to claim 15, wherein said distribution route information is distributed from an upper-stream node
25 to a lower-stream node along the distribution routes.

17. The distribution route generation method according to claim 16, wherein information that need not be transmitted to the lower node is deleted from
5 the distribution route information in the upper-stream node and remaining information is distributed from the upper-stream node to the lower-stream node.

18. The distribution route generation method
10 according to claim 16, wherein a port is secured to receive the streaming data in the lower-stream node and identification information of the port is notified from the lower-stream node to the upper-stream node.

19. A distribution route generation apparatus,
15 comprising:

collection means for collecting information about a communications cost between a plurality of nodes of a communications network;

20 generation means for automatically generating distribution route information, which indicates a plurality of distribution routes to a plurality of clients on the communications network from a source, based on the information about the communications cost
25 when streaming data are originated and distributed from

output means for outputting the distribution
route information.

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